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H05K F24F

(54) Cabinet for electronic equipment

(57) A cabinet for housing electronic, e.g. telephone, equipment in an outdoor environment has an inlet (22), an outlet (23) and a fan (27) for drawing air into the cabinet and circulating it around the electronic equipment (13). Vanes (30), which may be temperature activated in response to severe weather conditions, can be moved to block both the inlet and the outlet so that a closed circulation system can operate within the cabinet.

Fig.1.

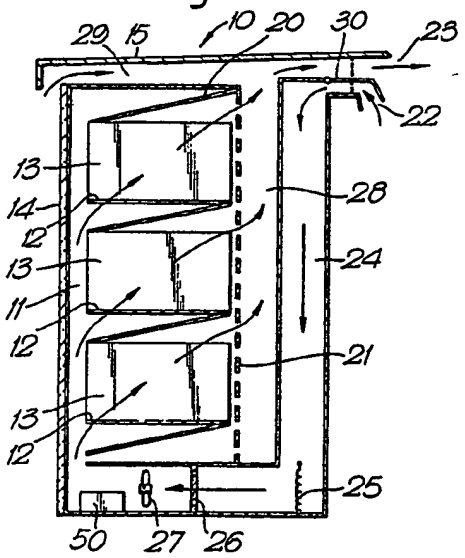

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Fig.1.

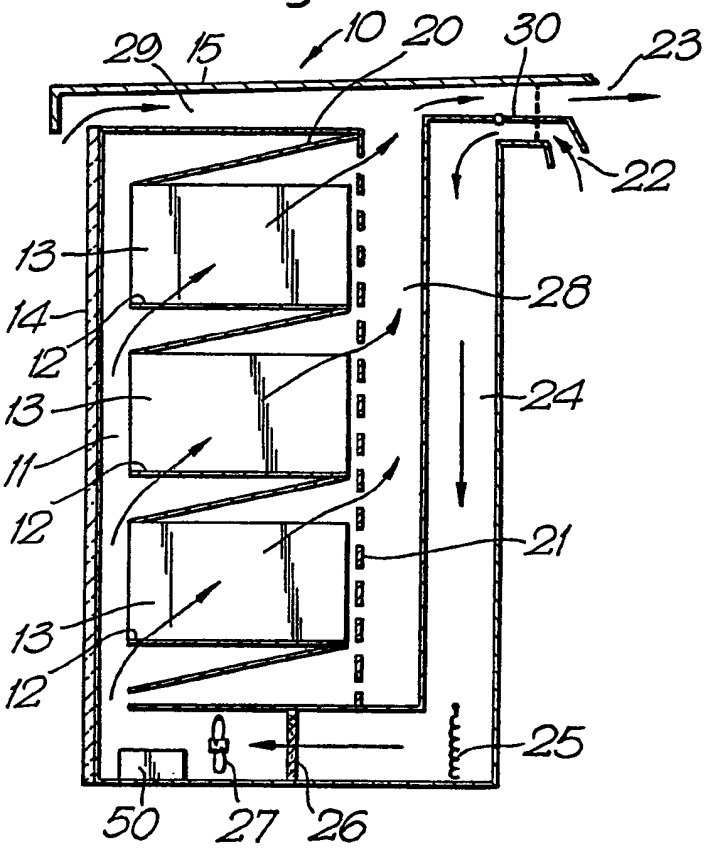


Fig.2.

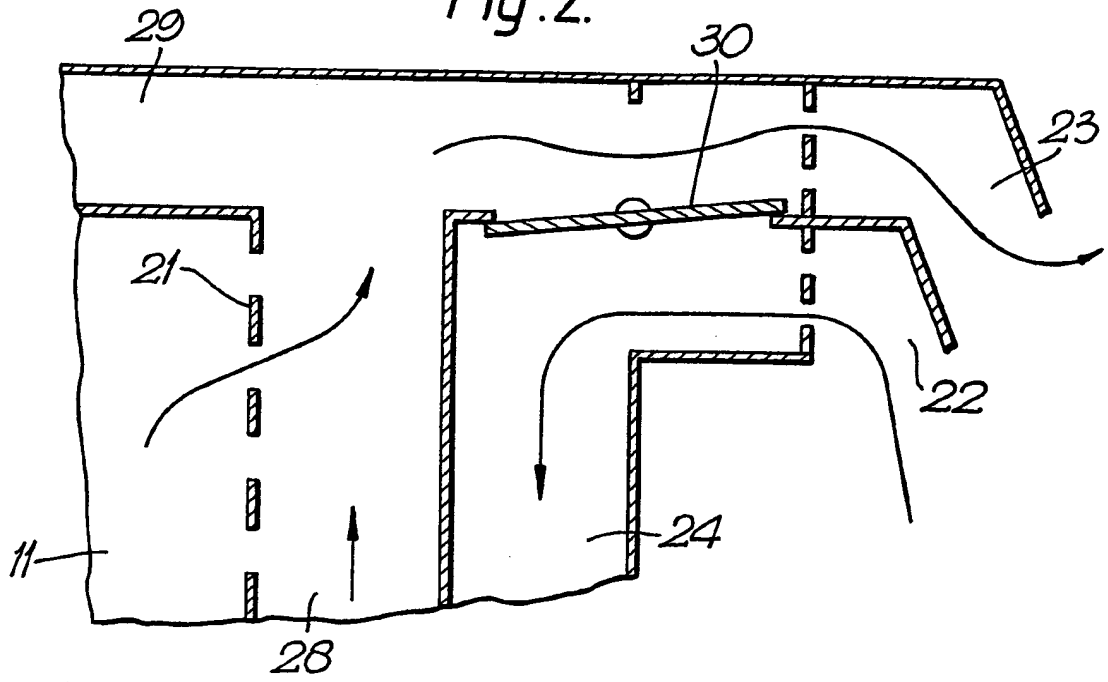


Fig.3.

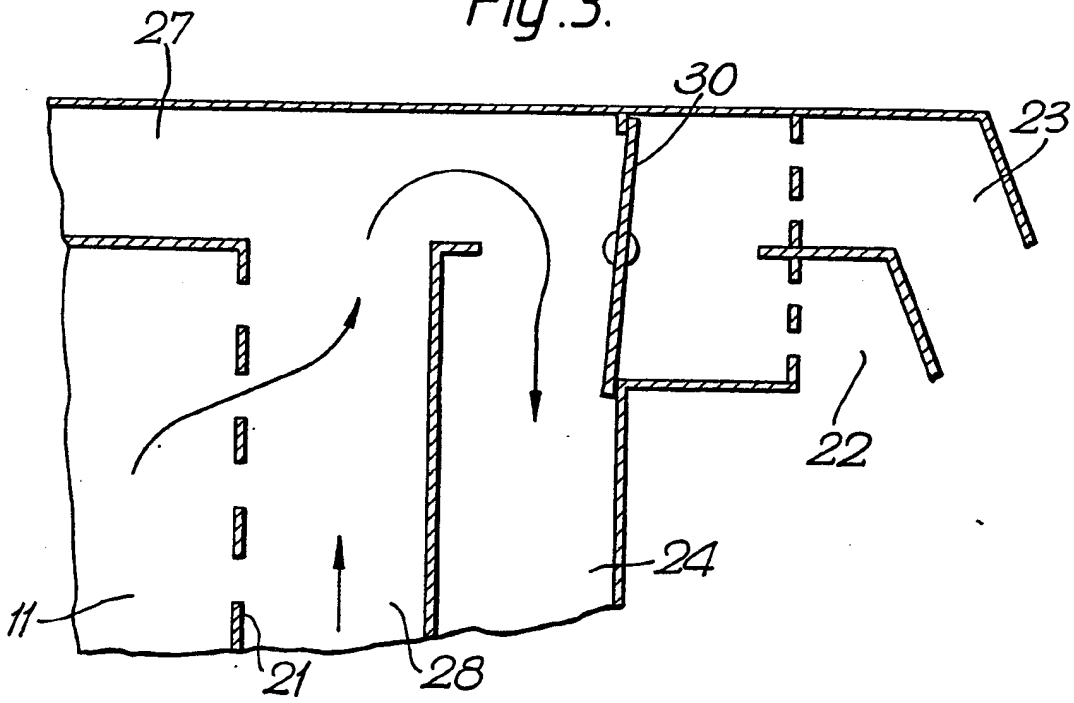


Fig.4.

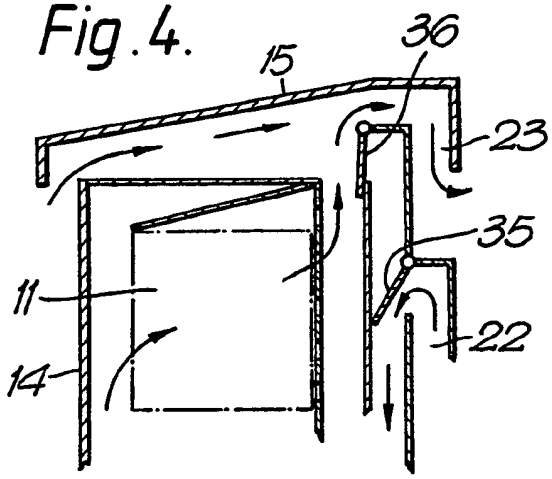


Fig.5.

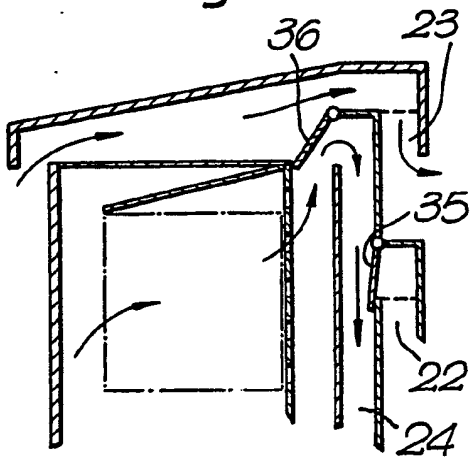


Fig.6.

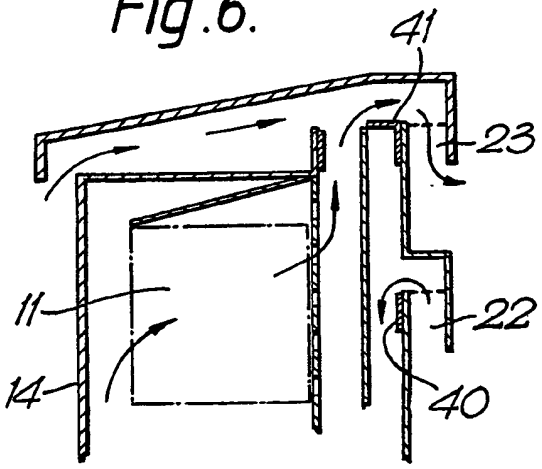
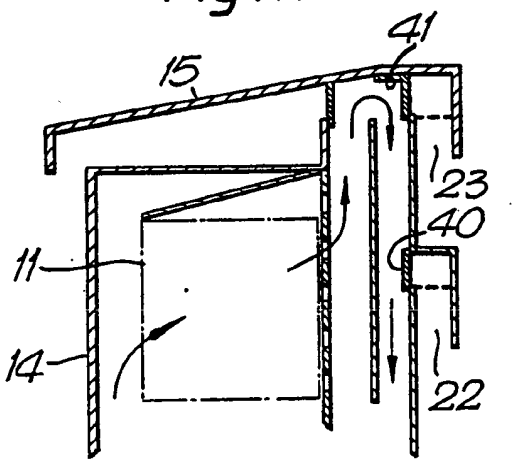


Fig.7.



Cabinet

The present invention concerns cabinets for storing electronic telephone exchange equipment at outdoor locations. Owing to the nature of the equipment it is important that it should be adequately protected from extremes of temperature. These can arise both from the prevailing weather or from the equipment itself generating heat. Accordingly the cabinet should be capable of housing high power equipment in a hot environment without overheating, and low power equipment in a low temperature environment without allowing its internal temperature to fall too low.

Accordingly the present invention consists in a cabinet for housing electronic equipment in an out-of-doors environment, the cabinet having an inlet and an outlet, means for drawing air into the cabinet and circulating the air within the cabinet, and means for blocking both the inlet and the outlet so that a closed circulation system can prevail within the cabinet.

In order that the present invention may be more clearly understood, embodiments thereof will now be described by way of example and with reference to the accompanying drawings, in which:

Figure 1 is a section through a cabinet constructed in accordance with the present invention,

Figures 2 and 3 are similar sections through an inlet/outlet vent in its respective open and closed conditions,

Figures 4 and 5 are similar sections through the roof-portion of a second embodiment of a cabinet, and

Figures 6 and 7 are views similar to Figures 4 and 5 of a third embodiment.

Referring now to Figure 1 of the drawings this shows a cabinet 10 for housing telephone exchange equipment in an out-of-doors environment. The cabinet 10 has a main compartment 11 having shelves 12 on which electronic equipment 13 can be mounted. The front wall 14 of the cabinet 10 is insulated, as is the roof 15 and the side walls (which are not shown). Each shelf in the compartment 11 carries a baffle 20. The rear wall 21 of compartment 11 is of a mesh-like or perforated structure so that air can flow through it.

At the rear the cabinet 10 has an opening which is divided into an inlet 22 and an outlet 23. The inlet 22 leads via a passage 24 past a heating arrangement 25 such as a coil, a dust filter 26 and fans 27. In this way air can be drawn into the compartment 11 and if necessary be heated. The outlet passage 28 for air leaving the compartment 11 joins with a separate flow passage 29 which passes beneath the roof of the cabinet between an inlet 30 and outlet 23. It can be seen that the contents of compartment 11 can be either heated or cooled by a parallel flow of air via inlet 22, passage 24 and fans 27.

In certain circumstances the ambient conditions might be so extreme that drawing air into the cabinet could cause problems. For example it might be so cold that the heater was unable to raise the temperature of the incoming air sufficiently. In such a case the cabinet can be turned into a closed circulation system by means of moveable vanes 30. As shown in Figure 2 the vanes 30 can take a first position in which they allow ambient air to pass freely into the cabinet via outlet 22 and freely out via outlet 23. In a second state, shown in Figure 3, the inlet and outlet are blocked so that the air circulates within the cabinet. This recirculation of hot air helps with dealing with excess moisture in cold conditions.

The vanes 30 can be controlled in a number of different ways. They can be driven by a motor, a solenoid or a temperature activated device such as a bi-metallic strip.

An alternative inlet/outlet arrangement is shown in Figures 4 and 5. In this embodiment the single, centrally pivoted vane 30 is replaced by two separate vanes 35, 36 respectively associated with passages 24, 28. Figure 5 shows the closed circulation configuration.

A still further variant is shown in Figures 6 and 7. In this embodiment inlet 22 is associated with a sliding vane 40 and outlet 23 with a right-angled vane 41. The vanes 40, 41 can be limbed so that they are moved by the same mechanism between the open conditon shown in Figure 6 and the closed circulation state shown in Figure 7.

In all the embodiments the operation of the heating arrangement 25 and the fans 27, and possibly also the movements of the various cones, is controlled by an environmental control box 50 located on the base of the cabinet and which can include both temperature and moisture sensors. Then it is possible that not only could the fans and heating coils be switched on and off in dependence with sensed condition, but also that the fans could be operated at variable speeds. This can be important when considering the accoustic performance of the cabinet. With regard to the insulation of the cabinet walls already mentioned can also be of a sound absorptive nature.

The inlets and outlets to the cabinet are preferably protected by fine mesh filters to give protection against particle contamination and also seal the cabinet from bird and insect interference. The inlets and outlets in all the embodiments are placed relatively high in the cabinet structure to reduce the risk of interference from extreme weather conditons such as snow drifts. The inlets and outlets are also "turned-down" to allow the cabinet to be positioned against walls.

CLAIMS

1. A cabinet for housing electronic equipment in an out-of-doors environment, the cabinet having an inlet opening and an outlet opening, means for drawing ambient air into the cabinet and circulating the air, and means for blocking both the inlet and the outlet so that a closed circulation system can prevail within the cabinet.

2. A cabinet as claimed on Claim 1, and including control means for operating said means for blocking the inlet and outlet in response to changes in the ambient conditions.

3. A cabinet as claimed in Claim 1 or Claim 2 wherein the means for drawing air into said cabinet and circulating it within said cabinet include a fan.

4. A cabinet as claimed in Claim 3 and including means for heating air as it is circulated within said cabinet.

5. A cabinet as claimed in a any one of the preceding Claims wherein the blocking means comprise pivoted vanes movable between a blocking position in which they respectively block the inlet and the outlet and an open position.

6. A cabinet as claimed in any one of Claims 1 to 4 wherein said blocking means comprise vanes each slidable between a blocking position and an open position.

7. A cabinet as claimed in any one of the preceding claims wherein said outlet is located adjacent the roof of the cabinet.

8. A cabinet as claimed in Claim 7, wherein said inlet is located adjacent to said outlet.

9. A cabinet as claimed in Claim 8, and including a filter mesh in the circulation path within the cabinet.

10. A cabinet for housing electronic equipment in an out-of-door environment substantially as herein before described with reference to either Figures 1 to 3 or Figures 4 and 5 or Figures 6 and 7 of the accompanying drawings.

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